

FIRST Impact Award - Team 2341

2023 - Team 2341
Team Number
2341
Team Nickname
Sprockets
Team Location
Shawnee, OK - USA
Describe the impact of the <i>FIRST</i> program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in <i>FIRST</i> programs as mentors/sponsors.
Over the course of the past three years all of our seniors continued to attend college or pursue a vocational career. 92% of these graduates pursue STEM degrees, and have received internships from industries such as Bison Metals, Enviro Systems, and TDK. One of our mentors did a week-long camp with the Cherokee Nation, sharing with them the message of FIRST and his experience working as an engineer.
Describe your community along with how your team addresses its unique opportunities and circumstances.
Our community's population is around 32,000, with a poverty rate of 24.4%. In an attempt to address poverty in our community, our team created STEM On Wheels, a mobile STEM camp that teaches healthy living and STEM to elementary and middle school students. This program educates students about the many STEM careers and their importance. We donate materials to local FIRST teams and welcome them into our workspace where they have access to machines and guidance from team members and mentors.
Describe the team's methods, with emphasis on the past 3 years, for spreading the FIRST message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?
We run a 4-week robotics camp each summer, introducing FIRST to kids. We have revamped our program STEM On Wheels this season, working to create a long term partnership with schools. We contacted 82 surrounding schools, inviting them to attend the Oklahoma Regional through tours. By working with schools, we build long-term relationships with them allowing us to work with their students over the years. We collect and log data from all of our outreach events into a spreadsheet.
Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.
We share our field with around 10 teams per year, manufacture parts for teams, and run events such as our brainstorming night to encourage coopertition. In 2021, we planned and hosted the OK Outlaw

Competition for 16 teams, with safety protocols in place. Last year we partnered with Team 5454 to share our scouting methods at the Green Country and Arkansas Regionals. Over the past two years, team members have volunteered as announcers, judges, and referees at local FLL and FTC competitions.

Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.

The past 3 years, we have assisted numerous teams by manufacturing custom parts for them and opening up our shop as a communal practice and work space. Team 1750, ThunderStorm Robotics, and Team 3247, Robopack, are teams local to us that have consistently come and shared our space and resources. In effort to bring the FIRST community together, we hosted the 2021 Outlaw event where we played a previous season's game and awarded custom banners to the top-seeded alliance.

Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?

We have recently reinstated our STEM On Wheels program for elementary and middle schools, teaching STEM activities to kids who may normally not have access to this type of curriculum. Through these activities we inspire young people to think big, and come up with innovative solutions. Our other initiatives include a new aerospace summer camp, a summer rocketry class, Sprockets in Training, and our annual Le'go Your LEGO Drive.

Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years

We collaborated with OCU which allowed for admission fees to be waived for our team members. We partnered with the Oklahoma Aeronautics Commission and Tinker which funded us for our STEM camps. Seminole invited to attend a STEM night at their high school. Connecting with Community Renewal has given us the opportunity to participate in their local block parties. Finally we worked with St. Anthony's hospital to create efficient face shields for the doctors.

Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.

Our team gladly accepts anyone interested in robotics. We do not believe that race, social status, or any other difference is a factor in whether someone can excel in FIRST. Team members have expressed that they felt welcome and comfortable on our team. We promote Women in STEM by attending and volunteering at the annual Worth It! Conference which is designed to educate women about STEM careers. We are also using our resources to promote FIRST in our Native American and lower income communities.

Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future

Experienced team members mentor newer members, teaching them skills and helping them find their niche on our team. We host a recruiting night every fall where we host visitors interested in joining our team in the future. Team members look for grants to fund outreach programs and the whole team is involved in these opportunities, embracing what it means to be a Sprocket. Our school commits \$30,000 per year to our team, and we work to make sure our relationship with all our sponsors continue.

Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years

To recruit sponsors, we like to get involved in their activities such as Boeing Friends and Family Day and Tinker AFB air shows. We show our appreciation for our sponsors by continuing to interact with them by visiting their businesses. We engage our sponsors by inviting them to our team practices, Monday night team meals, and our events. We also manufactured medals and presented them to Northrup Grummon at a competition in Houston. One of our mentors is employed by Boeing, one of our sponsors.

Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.

Our team would like to improve the diversity of our sponsors. By doing this, we would broaden the possibilities for internships for students with a broad range of interests. Steps we have taken to improve in this area are bringing potential sponsors, such as Bison Metals and Dan Foss, into our workspace to let them see and experience our involvement in FIRST. An alumnus has since secured an internship at Bison Metals, but we are seeking to add to our range of possibilities.

Describe your team's goals to fulfill the mission of *FIRST* and the progress you have made towards those goals.

Our team is heavily student-led which encourages members to become science and technology leaders as they have to take the reins in designing and programming, making game strategy decisions, and writing grants. Team members met with the Director of Career Tech to accomplish getting high school credit for after-school robotics programs in Oklahoma. Members have received Dean's List awards and honors/scholarships from organizations, such as OKWIT, for their STEM leadership.

Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.

During the pandemic, our community scrambled to find PPE for our first responders. Even though we could not meet as a team, students took home 3D printers loaned to us by the Army National Guard and our school. With these 3D printers, we made over 300 face shields and 100 ear protectors for 2 clinics, 3 hospitals, and 2 schools in our community. This helped us feel engaged in a solution to a crisis and helped us build a strong connection to the people in our community.

Essay

At the beginning of the school year, we experienced the retirement of two main mentors from the team resulting in a hole that needed to be filled. Losing these mentors allowed us to realize we needed to

improve our bond as a team and fill that hole with our dedication to each other and our team. Just as on a racing team, it is not on race day that all our hard work begins; on that day our tires are already warm on the track from months of building trust, communication, and a sustainable work ethic in our team. In this way, we have realized that everything we do in preparation for competition is just as important as competition day, and the way to accomplish our goals is as a team with an unbreakable bond. Our team consists of 18 members, 6 girls, and 12 boys. 100% of our seniors attend college or pursue a vocational career out of high school, with 100% of seniors being offered scholarships. 92% of these graduates pursue STEM degrees and have received internships from industries such as Bison Metals, Enviro Systems, and TDK. We maintain strong relationships with our alumni, who continue to uphold the Sprockets' mindset in FIRST and STEM. Mr. Ron Markum, Woodie Flowers award winner and one of our 7 mentors, is constantly using his experience in the STEM field to teach us about life after high school. When students first join the pre-engineering program, we invite new students to attend our practice and learn about our team. They went through three stations explaining the three main aspects of our team: robot, Impact, and scouting. They experience what it's like to be on the team and are invited to attend future practices to see Sprockets in action. 12 students who attended our New Student Night attended additional practices and later joined the Sprockets. At the beginning of the season, each veteran team member is paired with a rookie member and they spend the year mentoring and teaching all they know. At the beginning of every mandatory Monday practice, we get together as a team to plan out our week and what each member will accomplish within our to-do list. Not only are our team members supportive of each other, but our parents support us too, bringing Monday meals for us to share and bond as a team. Because we are 1 of only 2 organizations in our county that bring awareness to both FIRST and STEM, we saw a need to do more for our community in STEM exposure. The Sprockets ran a booth at the 2021 Pottawatomie County fair which we filled with a giant Lego wall, the previous season's robot, and information about our team. We host our annual aviation camp in the summer, teaching young students about aviation through hands-on learning. Students learned about different types of aviation while building small rockets, model airplanes, and Lego vehicles. Worth It! is an event held to empower young women to pursue STEM careers. During this event, our female team members have the opportunity to teach attendees how to drive the robot and educate young girls about what is available through FIRST and encourage them to join a FIRST team. Team members also attended McLoud Junior High's career day to teach kids about STEM, robotics, FIRST, and Gordon Cooper Technology Center. Kids participated in a fun STEM challenge building the longest bridges they could from straws, paper, and tape. We taught the students about FIRST robotics and the technical programs they could be a part of in the future.

New this year, we invited students from our community to participate in a free event called Health Career Exploration Night. We had healthcare professionals from our local industry join us for a night of hands-on activities and informational sessions. Students, 3rd through 8th grade, attended from surrounding schools and participated in hands-on activities that resembled the tasks our local medical specialists do in their jobs. Using a curriculum written by our team, students performed a pretend patient evaluation with Dr. Grant, built a model hand with physical therapist Mrs. Stafford, and learned how to fill a "cavity" with Dr. Ellis. While doing these activities, students talked to the professionals about their jobs and were able to ask them any questions they had.

A new event this season was providing an organized tour of the Oklahoma Regional, hosted in our town, to grade school students in the surrounding counties. The goal of this event was to show younger students what it was like to be involved in a STEM-related work field and in a healthy team-based environment. To start it off we created an organized schedule of the day and contacted 82 schools in our

surrounding area. By contacting schools and teachers, we were able to bring over 400 students to the competition. We showed them all of the different components of the competition, from the pits and Impact teams, to the robot field. They even had the opportunity to meet many of the judges working there, as well as competing teams from all over the country. This experience gave students an insight into both FIRST robotics and STEM careers, something our team focuses heavily on in every outreach opportunity.

We run a cost-free STEM On Wheels camp for low-income students where we provide healthy snacks to local 3rd-5th grade students and facilitate interactive STEM activities that teach the importance of STEM. Many of the students we work with have never heard of robotics before, so we talk to students about our team and robotics while keeping them busy with fun activities. This season we have visited 4 local elementary schools, seeing an average of 20 students each time. We have visited several schools more than once this season, and plan to continue re-visiting schools. This program is a great way to build connections with the next generation of students and a great way to get all of our team members involved, sending 4-5 students at a time to each school, no matter their position on our team. STEM on Wheels drives the students to reach their ultimate pole position because we realize every student is in their own race.

We have had many opportunities to drive deep into our community in ways other than STEM, and we are geared up to strengthen these ties as the season moves forward. Our entire team took part in sponsoring 4 children for our local Angel Tree, shopping for the items on their list. The Community Market in Shawnee welcomed us as volunteers throughout the season, where team members would assist with sorting donations, help customers shop the aisles, and unload groceries into cars. The Gilded Grayland, a game store in downtown Shawnee, was in need of some major repairs such as clearing out old tile and carpet and several team members took on these repairs and worked to get the store cleaned up. Community Renewal, a non-profit operating in Pottawatomie County, invited us to join them at one of their many block parties. At this event, we had a booth where we displayed our 2022 season robot, teaching adults and kids how to drive it, as well as Lego pieces for kids to build with, and informational pamphlets about our team and technology center. We love working in our community to make it a better place, and the more businesses, organizations, and individuals that we work with, the better.

While serving our community, we focus on encouraging high school students to pursue STEM careers, since this is the age at which they are deciding what career they want to have. Seminole High School hosted a STEM fair which we gladly participated in, educating high schoolers about both our robotics team and the pre-engineering academy that all of our team members attend. We informed students about the Pre-Engineering program, inspiring them to chase after their STEM passions. During Sophomore Showcase at Gordon Cooper Technology Center, sophomore students learned about all aspects of robotics and participated in a fun STEM challenge. At STEM Day, a STEM-based competition our team ran for local freshmen, we awarded \$1800 worth of STEM prizes; three 3D printers, classroom science sets, and K'Nex were among the prizes.

Our team realizes that we are very lucky to have the resources we do, so we welcomed teams in the surrounding area to utilize our space. We have assisted teams like Team 3247 Robopack and Team 1750 ThunderStorm Robotics. In the past years, we have driven ourselves to find new ways to help FIRST teams. For example, we created and hosted the April 2021 Outlaw event to allow teams to compete in person towards the end of the pandemic. We gave 4 robot awards to the winning alliance and the top-seeded team. One coach commented, "I can't tell you enough how much this meant to our kids,

and we appreciate you very much.” Additionally, our team consistently hosts FTC and FLL events at our school. We hosted the 2021 and 2022 Shawnee FLL qualifier; team members volunteered to judge, referee, queue, and announce.

Sprockets have strived to build our own local FIRST community by reaching out to and collaborating with other FIRST teams in our area. To do this, we have reached out to teams on social media and invited them to join us in person or online for technical help and fun. Right after kickoff, we invited teams in our area to join us for a brief overview of the rules, brainstorming about robot design, and a game mockup using rolling chairs, and people as the robots. One of our engineering mentors taught a beginner CAD class that members of local teams took part in, as well as another mentor who taught a LabVIEW class for the same students.

Our team is adapting and improving every week, focusing on ways to strengthen the team which fuels our performance in competition. 7-time world champion Formula 1 driver, Lewis Hamilton said, “In racing, there are always things you can learn, every single day. There is always space for improvement.” Taking on the mindset of working and learning as a team, has equipped us to cross the finish line united in a way we have never been before. ;

